## REMARKS

The Examiner made various objections to the drawings, which Applicants address as follows. (Office Action, pgs. 2-3) In the amended FIG. 3, Applicants have removed the reference to element "58" in FIG. 3 because no such reference is mentioned in the description. Applicants have amended the Specification to add references to steps 222, 224, and 228 in FIG. 5a at the corresponding description. With respect to FIG. 11, step "452" is mentioned in the Specification on page 27, line 6. Applicants amended the Specification to include a reference to step 456 at the corresponding description.

Applicants amended the Specification to change the reference to "error worker 380" to "error worker 326", which is shown in FIG. 9. Applicants have amended the Specification to change any reference to "supervisor 308" to "supervisor 304", which is shown in FIG. 6 and any reference to "job status table 304" or "308" to "job status table 254", which is shown in FIG. 6.

Applicants have amended the specification to correct references to the network, printer, and fax to refer to numbers 12, 14, and 16, respectively, as shown in FIG. 1.

Applicants submit that all the above amendments to the drawings and Specification overcome the Examiner's objections to the Drawings and Specification.

Per the request of the Examiner, Applicants amended the Abstract to comply with the word limit requirement.

Applicants have amended the claims to overcome the claim objections on page 3 of the Office Action.

The Examiner rejected claims 3, 7, 9, 10, 11, 16, 20, 22, 23, 24, 29, 33, 35, 36, and 37 as indefinite under 35 U.S.C. §112, par. 2. (Office Action, pg. 4) In response, Applicants have amended these claims to correct antecedent basis and other minor errors to overcome the indefiniteness rejection.

1. Claims 1, 5-11, 13, 14, 18-24, 26, 27, 31-37, and 39 are Patentable Over the Cited Art

The Examiner rejected claims 1, 5-11, 13, 14, 18-24, 26, 27, 31-37, and 39 as anticipated (35 U.S.C. §102(b)) by Hsu (U.S. Patent No. 5,581,691). Applicants traverse for the following reasons.

Independent claims 1, 14, and 27 concern workflow management for creating and delivering output material, comprising: generating a customer record to include fields specifying at least one product, customer preferences, and a selected output method to deliver generated output material on the product specified in the customer record; adding a job record including a status field to a job status table for the customer record; setting the added job record status to a first status; processing a selected job in the job status table; invoking a first worker if the selected job has the first status; generating, with the first worker, output material from processing the product and customer preference fields in the customer record for the selected job; setting the status for the selected job in the job status table to a second status after generating the output material with the first worker; invoking a second worker if the selected job has the second status; determining, with the second worker, a selected one of a plurality of delivery options from the customer record for the selected job; and transmitting, with the second worker, the output material via the determined delivery option to the customer specified in the customer record.

The Examiner cited col. 7, line 42 of Hsu as disclosing generating a customer record to include fields specifying at least one product, customer preferences, and a selected output method to deliver generated output material on the product specified in the customer record. (Office Action, pg. 5). Applicants traverse.

The cited col. 7, line 42 -53 discusses that for work flows the manager may want to assign work flow steps to particular individuals and record such assignments in a predefined file. According to the cited Hsu, when selecting a principal to execute such workflow steps, the predefined file is consulted to see if an individual is assigned to the step. If no individual is assigned, selection criteria is used to select an individual for the step.

Nowhere does the above cited col. 7 anywhere disclose or remotely mention generating a customer record specifying at least one product, customer preferences and a selected output

method to deliver output material on the product. Instead, the cited col. 7 only discusses how an individual may be assigned to a step in a workflow and does not disclose any of the specific requirements of the first limitation concerning generating the customer record.

The Examiner cited col. 4, lines 39-41 of Hsu as disclosing the claim requirement of adding a job record including a status field to a job status table for the customer record. (Office Action, pg. 5). Applicants traverse.

The cited col. 4 mentions a history database that is a log record database that can be inspected to determine the status of any ongoing workflows. Although the history database of Hsu may maintain information on the status of workflows, nowhere does the cited col. 4 anywhere disclose or remotely mention adding a job record including a job status field to a job status table for a customer record as claimed. Instead, the cited col. 4 just discusses maintaining status on a work flow in general.

The Examiner cited col. 6, lines 20-26 of Hsu as disclosing the claim limitations concerning generating, with a first worker, output material from processing the product and customer preference fields in the customer record for the selected job; determining, with a second worker, a selected one of a plurality of delivery options from the customer record for the selected job; and transmitting, with the second worker, the output material via the determined delivery option to the customer specified in the customer record. (Office Action, pg. 6)

The cited col. 6 of Hsu mentions that the data stored in the workflow database can be used to specify business process schemas, somewhat like the schemas for a database. A business process schema specifies work units, conditions for instantiating each work unit, applications used to execute the work unit, the format of output signals generated by the work unit, etc. Nowhere does this cited section anywhere disclose the claim requirements of generating output material with a first worker processing the product and customer reference fields, selecting a delivery option, and then transmitting with another work the output material via a determined delivery option indicated in the customer record. Although the cited col. 6 mentions that business schemas may be stored in the workflow database, nowhere does the cited col. 6 anywhere disclose the specific claim requirements concerning generating output material from a

customer record and transmitting such generated output via a delivery option determined from the customer record using workers in a workflow management system as claimed.

The Examiner said that the mention of a workflow to process business schemas in Hsu would inherently include the claimed output and delivery methods. (Office Action, pg. 6) Applicants traverse. The system of Hsu may discuss a workflow for business schemas in general, but nowhere does the cited Hsu disclose or anywhere mention the specific claim requirements concerning processing, with one worker, a customer record to generate the output material and determining, with a second worker in the work flow, a delivery option, etc.

The Manual of Patent Examination and Procedure (MPEP) cites law that states:

> "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. [citation omitted] The identical invention must be shown in as complete detail as is contained in the ... claim. [citation omitted]"

MPEP 2131, p. 2100-69 (8th Ed., Aug. 2001)

The cited Hsu cannot anticipate independent claims 1, 14, and 27 because the cited Hsu does not disclose all the claim requirements, such as the claim requirements concerning the use of the first and second workers and a job status table as claimed to process a customer record to generate output material and to determine a delivery option to transmit the output material. Because Hsu does not disclose all the claim limitations, Hsu cannot anticipate these claims.

Accordingly, claims 1, 14, and 27 are patentable over the cited Hsu.

Claims 5-11, 13, 18-24, 26, 31-37, and 39 are patentable over the cited art because they depend from claims 1, 14, and 27, which are patentable over the cited Hsu, and because the combination of the dependent claim limitations with the base and intervening claims provide further distinctions over the cited art. Moreover, the claims discussed below provide still further additional grounds of patentability over the cited art.

Claims 7, 20, and 33 depend from claims 1, 14, and 27 and further require a worker transition table including a plurality of records, each indicating an input worker, a completion state, an output worker, and an output status. The input worker indicates the worker assigned to process the job, the completion state is a status indicated for the job after the input worker

processes the job, the output worker is the worker that processes the job after having been processed by the input worker and resulting in the completion state, and the output state is the state to which the job status in the job status table is set. The job status table further indicates a current worker assigned to process the job, wherein setting the status for the selected job in the job status table comprises determining from the worker transition table one record having an input worker and completion state matching the current worker and the job status, respectively, and setting the status for the selected job to the output state and the current worker to the output worker.

The Examiner cited col. 6, lines 10-13, FIG. 4, step 152, and col. 4, lines 39-41 as disclosing the additional requirements of claims 7, 20, and 33. (Office Action, pg. 7) Applicants traverse.

The cited col. 6, lines 10-13 mentions that a model of the work flow is stored in a set of tables called a workflow descriptor database. The cited FIG. 4 discusses a flow including an input evaluation model that determines when enough input events have been received to require that an instance of the step 152 be created and executed by routine 174. (Hsu, col. 5, line 59 to col. 6, line 9)

Nowhere does the cited col. 6 or FIG. 4 anywhere disclose the claim requirement of indicating an input work and an output work in each record of a worker transition table, where the input worker is the worker that processes the job and the output worker is the worker that processes the job after having been processed by the input worker. Nowhere does the cited Hsu anywhere disclose a workflow record indicating an input and output workers as claimed. Instead, the cited Hsu just mentions how input events can cause a certain action, such as step 152. Hsu does not disclose the worker transition table as claimed.

Further, nowhere does the cited Hsu anywhere disclose the claim requirement of determining one record in the worker transition table having an input worker and completion state matching the current worker and job status as claimed.

The cited col. 4, lines 39-41 of Hsu mentions a history database that is a log record that can be inspected to determine the status of ongoing workflows. Nowhere does this cited col. 4 anywhere disclose the worker transition table and elements therein as claimed.

Accordingly, because the cited Hsu does not disclose the specific requirements of the claimed worker transition table, claims 7, 20, and 33 provide additional grounds of patentability over the cited art.

Claims 8, 21, and 34 depend from claims 7, 20, and 33 and further require invoking the output worker after setting the job status to the output status.

The Examiner cited col. 6, lines 31-37 of Hsu as disclosing the additional requirements of these claims. (Office Action, pg. 7). Applicants traverse.

The cited col. 6 mentions a distinction between execution of individual work units handled by application programs under control of clients and controlling what happens between execution of work units handled by system flow controller.

Although the cited col. 6 generally mentions work flow handling, nowhere does the cited col. 6 anywhere disclose the specific claim requirement of invoking an output worker, indicated in a record of the worker transition table, after setting the job status to output status, also indicated in the record.

Accordingly, claims 8, 21, and 34 provide additional grounds of patentability over the cited art.

Claims 10, 23, and 36 depend from claims 1, 14, and 27, respectively, and further require setting the status to a third status after adding the job entry in the job status table; invoking a data conditioning worker if the job status for the selected job is the third status; processing, with the data conditioning worker, the customer record to determine whether at least one value satisfies at least one condition; taking corrective actions, with the data conditioning worker, if the data in the customer record does not satisfy each condition; and setting the status of the selected job to the first status if the data in the customer record satisfies each condition.

The Examiner cited col. 15, lines 50-54 and col. 6, lines 31-37 of Hsu as disclosing the claim requirement of invoking a data conditioning worker if the job status for the selected job is a third status. (Office Action, pg. 7)

The cited col. 15, lines 50-54 mentions a type ref table that points to a software routine that selects a resource to execute a step. The cited col. 6 mentions a distinction between execution of individual work units, handled by application programs under the control of clients and controlling what happens between execution of work units.

Nowhere do these cited cols. 6 and 15 of Hsu anywhere disclose or mention the claim requirement of invoking a data conditioning worker if the job status for the job is set to a third status. Nowhere does the cited Hsu mention any first or second status, let alone a third status that triggers a data conditioning worker as claimed.

The Examiner cited col. 6, lines 22-25 of Hsu as disclosing the claimed operations performed by the data conditioning worker, such as processing the customer record to determine whether at least one value satisfies at least one condition; taking corrective actions if the data in the customer record does not satisfy each condition; and setting the status of the selected job to the first status if the data in the customer record satisfies each condition. (Office Action, pgs. 7-8) Applicants traverse.

The cited col. 6, lines 22-25 mentions that the data stored in the workflow database can be used to specify business process schemas, somewhat like the schemas for a database. A business process schema specifies work units, conditions for instantiating each work unit, applications used to execute the work unit, the format of output signals generated by the work unit, etc.

Nowhere does the cited col. 6 anywhere disclose or remotely mention the claim requirements of a data conditioning worker processing a customer record to determine whether at least one value satisfies a condition and then taking corrective action if the customer record does not satisfy the condition.

Accordingly, claims 10, 23, and 36 provide additional grounds of patentability over the cited art.

2. Claims 2-4, 12, 15-17, 25, 28-30, and 38 are Patentable Over the Cited Art

The Examiner rejected claims 2-4, 12, 15-17, 25, 28-30, and 38 as obvious (35 U.S.C. §103) over Hsu in view of Milsted (U.S. Patent No. 6,345,256). Applicants traverse for the following reasons.

First off, claims 2-4, 12, 15-17, 25, 28-30, and 38 are patentable over the cited combination because they depend from claims 1, 14, and 27, which are patentable over the cited art for the reasons discussed above, and because the Examiner cited Milsted for the requirements added in the dependent claims, not the deficiencies of Hsu with respect to independent claims 1, 14, and 27 discussed above. Moreover, the claims discussed below provide additional grounds of patentability over the cited art.

Claims 2, 15, and 28 depend from claims 1, 14, and 27 and further require that the first worker generates output material by: accessing at least one content file by processing a database table using values in the customer record associated with the selected job; and generating the content of each accessed file into the output material.

The Examiner cited col. 52, lines 39-47 of Milsted as teaching the dependent claim requirements. (Office Action, pg. 9) Applicants traverse.

The cited col. 52 of Milsted mentions that a content provider determines products it wants to sell and deliver electronically. Work flow manager 154 enables an operator to identify the products on place them on a queue 802. The content provider may specify through configuration options the information prompted for on the product selection interface.

Nowhere does the cited Milsted anywhere teach or suggest the claim requirement of accessing a content file by processing a database table using values in a customer record. The cited Milsted only mentions how a product selection interface may be generated to allow an operation to identify products. Nowhere does this cited section teach processing a database table using values from a customer record to access a content file that is generated into output material.

Any suggestion by the Examiner to modify the cited art to produce what is claimed would be improper because the cited art nowhere teaches or suggests these additional claim requirements or provides a motivation to make such modifications.

Accordingly, claims 2, 15, and 28 provide additional grounds of patentability over the cited art.

Claims 3, 16, and 29 depend from claims 2, 15, and 28 and further require that the first worker further performs: processing a template including queries of records in the database table; accessing at least one value in a field in one customer record to include in a query against the database table; and applying the query against the database table to determine a record associated with a file including fields matching the query, wherein the accessed file is associated with the determined record, and wherein generating the content into the output material comprises generating the content from the accessed file into the template, which forms the output material.

The Examiner cited col. 53, lines 46-61 of Milsted as teaching the additional requirements of these claims. (Office Action, pg. 10) Applicants traverse.

The cited col. 53 mentions that a content provider may specify through configuration options what information is prompted for on the product interface selection. Enough information is entered to identify the product. Milsted discusses how information may also be provided through manual entry, retrieved from default configuration settings, etc.

Nowhere does the cited Milsted anywhere teach or suggest accessing a value in one field in a customer record to include in a query against a database table to determine a record, where a file associated with the record is accessed and generated into the output material. Instead, the cited Milsted only mentions how to determine what information to prompt for on a selection interface. Nowhere in Milsted is there any suggestion of accessing a value in a customer record to query a table to determine a file to generate into output material as claimed.

Accordingly, claims 3, 16, and 29 provide additional grounds of patentability over the cited art.

Claims 12, 25, and 38 depend from claims 1, 14, and 27 generating information on the output material; setting the status for the selected job in the job status table to a third status; invoking an accounting worker if the job has the third status; processing, with the accounting worker, the generated information on the output material to determine costs of generating the

output material; and generating, with the accounting worker, an invoice including the determined costs of the output material.

The Examiner recognized that Hsu does not disclose an accounting worker as claimed. However, the Examiner found that the accounting operation in col. 81, lines 7-10 of Milsted would make it obvious to modify Hsu to have an accounting worker. (Office Action, pg. 11) Applicants traverse.

The cited col. 81 of Milsted mentions an account reconciliation tool to assist with accounting. Nowhere in the cited Milsted is there any suggestion of invoking an accounting worker if there is a third status to process the output material and generate an invoice including costs of the output material. Milsted's general mention of accounting nowhere teaches or suggests the specific claimed workflow accounting operations of the claims.

Thus, Milsted does not teach accounting operations as claimed or modifying a workflow management system to have accounting operations as claimed. For this reasons, the Examiner's proposed modifications of Hsu to include an accounting worker as claimed are not taught or suggested in any cited art.

For these reasons, claims 12, 25, and 38 provide additional grounds of patentability over the cited art.

## Conclusion

For all the above reasons, Applicant submits that the pending claims 1-39 are patentable over the art of record. Applicants submit herewith a Petition for a One Month Extension of time and the accompanying fee. Nonetheless, should any additional fees be required, please charge Deposit Account No. 50-0585.

The attorney of record invites the Examiner to contact him at (310) 553-7977 if the Examiner believes such contact would advance the prosecution of the case.

Dated: August 26, 2002

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

The paragraph on page 5, line 22 to page 6, line 9 is amended as follows:

An output constructor 10 receives the template and using information in a customer record from the customer database 6 and the content database 8 populates the template with marketing information tailored for the customer. After generating direct marketing material comprised of the populated template in accordance with preferred embodiments described below, the output constructor 10 may then direct the marketing material to a printer [12] 14 for printing or to a facsimile (fax) machine [14] 16 for facsimile transmission to the targeted customer. Further, the marketing materials may be converted into a portable format, such as an Hypertext Mark-Up Language (HTML) or XML page or in the an ADOBE ACROBAT** format to transmit to the customer via e-mail 16. A network 12 provides communication among the data input computer 4, customer database 6, content database 8, output constructor 10, printer 14, fax machine 16, an e-mail gateway 18 to customers, and a workflow engine 20. The network [18] 12 may be comprised of any network system known in the art including TCP/IP network (e.g., an Intranet, the Internet), LAN, Ethernet, WAN, Token Ring, etc. Alternatively, there may be separate and different networks between the components.

The paragraph on page 14, lines 9-22 is amended as follows:

If a query is included in the container, then the output constructor accesses (at block 216) the data in the customer data record column corresponding to the column subject to the query. The output constructor then builds and submits a query (at block 218) to query metadata records in the content database 8 for records for the container *i* and satisfying the search criteria and value from the customer record. If there is a matching metadata record (at block 220, in FIG. 5b), then the output constructor 10 accesses (at block 224) the file associated with the metadata record and generates (at block 226) the content of the accessed file into the output. If (at block 220), there was no matching data record, then the output constructor 10 would access (at block

222) default content for the container. After generating the content, control returns to block 202 to consider the next container until all containers have been considered. After generating the final output, the output constructor 10 determines (at block 228) the output device, from the customer record, and then sends the generated output to the output device to send to the customer.

The paragraph on page 14, line 23 to page 15 line 4 is amended as follows:

The selected output device indicated in the customer record may determine how the output is generated. For instance, if the marketing output will be transferred by e-mail 18, then the document may be transformed into an Adobe Acrobat format, or other portable document format, for transmittal for the e-mail system. For the fax [14] 16 and the printer 14, the output would be similarly tailored to those or any other output devices. The generated output is then converted (at block 230) into a format compatible with the output device. For instance, if the output device is the fax [14] 16, then the output would be converted into the CCIT Group 3 fax format, and if the output device is the e-mail gateway 18, then the output is converted into the Adobe Acrobat PDF format for attachment to an e-mail message to the customer.

The paragraph on page 15, lines 5-15 is amended as follows:

The output constructor then builds (at block 232) delivery parameters for the converted output. The delivery parameters would comprise other components to include with the converted output when transmitting through the output device. For instance, for the fax [14] 16, the delivery parameters could define a fax cover page to include with the marketing materials. The output constructor 10 would insert data into the fax cover page from the customer record, e.g., the customer's fax, contact person, etc. For e-mail, the delivery parameters would comprise the e-mail message including customer information in the address fields obtained from the customer record. The output constructor 10 would then transmit (at block 234) the converted output material along with any delivery parameters to the customer via the appropriate output device, e.g., printer [12] 14, fax [14] 16, e-mail. 18.

The paragraph on page 15, lines 16-27 is amended as follows:

Further, the customer database 6 may include status records, fields or tables associated with customer records indicating the status of generation and transmission of output material for an associated customer record. e.g., whether output material was generated for a customer, transmitted, successfully transmitted, failed, etc. In this way, the customer database 6 serves as the status focal point of the system. An administrator could also query the status records to determine the status of generating and transmitting output material for a given customer record. Further embodiments would include error handling mechanisms if the transmission of the output material via the fax [14] 16 or e-mail gateway 18 fails. The system could automatically query the status records for failed transmissions, and then redrive the transmissions or automatically notify an administrator to take corrective action, such as check whether the customer contact and address information is correct.

The paragraph on page 19, lines 1-12 is amended as follows:

FIG. 7 illustrates an example of a workflow transition table 330 including a workflow having the name "2-up Print". Thus the workflow transition table 330 may include multiple workflows identified by the "Workflow Name" field. The "From Worker" indicates the input worker and the "From State" indicates a possible state that may occur after the "From Worker" completes processing the job. For instance, the "From Worker" GetInput ends a job with one of two possible states, "complete" or "error." The "From Worker" Condition completes a job in one of three states, "complete," "NeedGraphs" or "error". The "To Worker" indicates the output worker that the supervisor [308] 304 invokes upon receiving a message that the "From Worker" ended a job in the "From State". The "To State" indicates the output state the supervisor [308] 304 sets for the job when a job is completed by the worker indicated in the "From Worker" field with the result indicated in the "From State."

The paragraph on page 19, lines 13-23 is amended as follows:

In preferred embodiments, the worker completing a job (From Worker) would update the status in the job status table [252] 254 to the "From State" indicating the outcome of processing the job, e.g., complete or error and set a flag indicating that the record was updated. The supervisor [308] 304 would then poll the job status table. FIG. 8 illustrates an example of a job status table [252] 254 that includes a job ID, current status, current worker, workflow name, status time stamp, priority, and update flag. The current status indicates a current status and the current worker indicates the worker currently processing the job. The workflow name column indicates the name of the workflow processing the job, the priority column indicates a priority of the job, and the update flag indicates when a record is updated by one worker or the supervisor [308] 304.

The paragraph on page 19, line 24 to page 20, line 8 is amended as follows:

When a worker completes processing a job, the worker would set the current status to the status representing the outcome of the processing, complete, error, need graphs, etc., and the update flag to on. The supervisor [308] 304 when polling the job status table would examine those job records having an update flag "on" and determine whether the current worker and current status in the job record matches the"From Worker" and "From State" in one worker transition table record. If there is a match, then the supervisor [308] 304 sets the current status to the "To State" and current worker to the "To Worker" in the matching worker transition record. The update flag would be left "on." The supervisor [308] 304 would then invoke the "To Worker" to cause the "To Worker" to process the job table and recently updated record. The invoked worker, upon locating a record with the update flag "on" and having a Current Worker and Current status matching its input status, would turn the update flag "off" and then process the job.

The paragraph on page 20, lines 9-17 is amended as follows:

For instance, if the Condition worker completed a job, it would update the current status in the job status table to complete and set the update flag to "on". Upon polling the job status table, the supervisor [308] 304, would process the record having its update flag "on", and notice that the current status of Condition and current state of complete for the job record matches the "From Worker" and "From State" in one transition record. The supervisor [308] 304 would then update the current worker and current status in the job record to the "To Worker" and "To State" in the matching workflow transition table record. Upon updating a record in the job status table, the supervisor [308] 304 would invoke the new current worker to process the job status table.

The paragraph on page 20, line 18 to page 21, line 2 is amended as follows:

Moreover, the supervisor 304 might perform such additional operations as maintaining resources for workers to use (database connections, file handles, network connections, threads, etc.); load balancing among the workers (keep track of how many instances of a particular worker are running concurrently and route work among them, limit the number of concurrent workers based on system configuration, etc.); and monitoring job state changes to provide a common point of control for unexpected interruptions in the job flow. Moreover, the supervisor 304 may allow multiple workers to operate concurrently and share resources. Such workers would process different jobs in parallel. The supervisor 304 may manage the resource sharing among concurrently executing workers. The worker, in response to being invoked, queries the job status table [310] 254 for the jobs having the input status of the invoked worker.

The paragraph on page 21, lines 3-17 is amended as follows:

In response to being invoked, the invoked worker 312, 314, 318, 320, 322, 324, 326 or 328 would obtain a connection or handle to the database 252 from the supervisor [308] 304. Alternatively, the worker may maintain its own connection to the database 252. Connections with the database 252 may utilize any database connection protocol known in the art, such as an as Open Database Connectivity (ODBC) to access the records in the database. The supervisor 304 maintains a constant open connection with the job status table 254 as the supervisor 304 is continuously polling the job status table for jobs to process. The worker 312, 314, 318, 320, 322, 324, 326 or 328 then performs its worker specific operations on the job. In processing the job, the worker may process the worker specific tables 258 which include configuration information for each worker depending on the attributes of a job. After completing the operations, the worker 312, 314, 318, 320, 322, 324, 326 or 328 sets the status for the job in the job status table 254 to one output status which will be used to cause the supervisor 304 to invoke the next worker in the workflow to access and process the job.

The paragraph on page 20, lines 18-21 is amended as follows:

The job status table [304] 254, supervisor [308] 304 and workers 312, 314, 318, 320, 322, 324, 326 or 328 may be implemented on the same or separate machines. If the components are on separate machines or distributed among multiple server nodes, then the components would communicate over a network interconnecting the nodes.

The paragraph on page 20, line 22 to page 21, line 2 is amended as follows:

When a worker is finished processing the job, then the supervisor [308] 304, the worker or some other process would process the workflow transition table 256 to determine the appropriate output status to set for the job status. If the processing of the job failed, the worker may set the status to an error status to cause the supervisor 310 to invoke an error worker [380] 326. Otherwise, the worker would set the job status to complete. In this way, the workflow path or order of job processing is defined by altering the current status field in the job status table to

cause the supervisor 308 to change the current status and current worker to the next worker in the workflow based upon the workflow transition table 256.

The paragraph on page 26, lines 9-27 is amended as follows:

The workflow management process is illustrated in FIGs. 9 and 10 and utilizing a job status table and workflow transition table as described with respect to FIGs. 7 and 8. Control begins at block 400 in FIG. 9 with the supervisor 304 polling the jobs status table [308] 254 at predetermined intervals. The supervisor 304 begins a loop at block 402 and accesses each job record in the job entry table having the update flag on. For each job, the supervisor 304 determines (at block 404) whether the current worker and current status in the job record matches the "From Worker" and the "From State" in one record in the workflow transition table 256 for the workflow indicated in the workflow name field. If the supervisor [308] 304 locates a matching record in the workflow transition table, then the supervisor [308] 304 sets (at block 406) the current worker and current status in the job record being considered to the "From Worker" and "From State" in the located workflow transition record, and sets (at block 408) the update flag to "on". Setting the update flag "on" will trigger the worker to consider the record when querying the job status table 254. The supervisor [308] 304 invokes (at block 410) the new current worker to process the job status table 254 and then proceeds (at block 412) to consider the next entry in the job status table having the update flag "on". In further embodiments, the supervisor [308] 304 and worker may process records in the job status table 254 according to a priority ordering specified for each record in the job status table.

The paragraph on page 27, lines 1-18 is amended as follows:

FIG. 11 illustrates the steps performed by the workers 312-328 upon being invoked by the supervisor 304. If the worker being invoked is already processing the job status table 254, then the worker may ignore the invocation. At block 450, the invoked worker queries the job status table 254. The worker may query the job status table according to a priority ordering of the jobs in the job status table 254. The worker then begins a loop at block 452 to process each job

having the update flag "on", and the current worker and current status equal to the invoked worker and ready status. The worker sets (at block 454) the update status to "off" for the record during the time the worker is processing the job. The worker performs (at block [454] 456) the worker specific operations, e.g., data conditioning, generating a graph, constructing a page, imposition reformatting, generating a table of contents, generating and delivering output, accounting, etc. After completing job processing, the worker would then update (at block 458) the current state in the job record to the outcome of processing the job, e.g., complete or error and set the update flag to "on" to cause the supervisor [308] 304 to consider the job record. Alternatively, the worker may send a message to the supervisor 304 indicating the outcome of the job processing, e.g., success, error, etc. The worker would proceed (at block 460) back to block 452 to consider more jobs having the worker status in the job status table 254.

IN THE CLAIMS

Claims 1, 3, 7, 9, 10, 11, 16, 20, 22, 23, 24, 29, 33, 35, 36, and 37 are amended as follows:

1. (Amended) A workflow management [system] method for creating and delivering output material, comprising:

generating a customer record to include fields specifying at least one product, customer preferences, and a selected output method to deliver generated output material on the product specified in the customer record;

adding a job record including a status field to a job status table for the customer record;

setting the added job record status to a first status;

processing a selected job in the job status table;

invoking a first worker if the selected job has the first status;

generating, with the first worker, output material from processing the product and customer preference fields in the customer record for the selected job;

setting the status for the selected job in the job status table to a second status after generating the output material with the first worker;

invoking a second worker if the selected job has the second status;

determining, with the second worker, a selected one of a plurality of delivery options from the customer record for the selected job; and

transmitting, with the second worker, the output material via the determined delivery option to the customer specified in the customer record.

3. (Amended) The method of claim 2, wherein the first worker further performs:

processing a template including queries of records in the database table;

accessing at least one value in a field in one customer record to include in a query against the database table; and

applying the query against the [second] database table to determine a record associated with a file including fields matching the query, wherein the accessed file is associated with the determined record, and wherein generating the content into the output material comprises generating the content from the accessed file into the template, which forms the output material.

7. (Amended) The method of claim 1, wherein a worker transition table includes a plurality of records, each indicating an input worker, a completion state, an output worker, and an output [status] state, wherein the input worker indicates the worker assigned to process the job, the completion state is a status indicated for the job after the input worker processes the job, the output worker is the worker that processes the job after having been processed by the input worker and resulting in the completion state, and the output state is the state to which the job status in the job status table is set, and wherein the job status table further indicates a current worker assigned to process the job, wherein setting the status for the selected job in the job status table comprises determining from the worker transition table one record having an input worker and completion state matching the current worker and the job status, respectively, and setting the status for the selected job to the output state and the current worker to the output worker

9. (Amended) The method of claim 7, wherein setting the status for the selected job after processing the job with one worker, comprises the worker that [completing] completed processing the job setting the completion status to a state indicating an outcome of processing the job.

10. (Amended) The method of claim 1, further comprising:

setting the status to a third status after adding the job [entry] in the job status table;

invoking a data conditioning worker if the job status for the selected job is the third status;

processing, with the data conditioning worker, the customer record to determine whether at least one value satisfies at least one condition;

taking corrective actions, with the data conditioning worker, if the data in the customer record does not satisfy each condition; and

setting the status of the selected job to the first status if the data in the customer record satisfies each condition.

11. (Amended) The method of claim 6, further comprising an imposition worker and table of contents worker, wherein the supervisor program sets the job status to an imposition status and table of content status, and wherein the supervisor program invokes the imposition and table of content workers.

16. (Amended) The system of claim 15, wherein the first worker further comprises:

means for processing a template including queries of records in the database table;

means for accessing at least one value in a field in one customer record to include in a query against the database table; and

means for applying the query against the [second] database table to determine a record associated with a file including fields matching the query, wherein the accessed file is associated with the determined record, and wherein generating the content into the output material

comprises generating the content from the accessed file into the template, which forms the output material.

20. (Amended) The system of claim 14, wherein a worker transition table includes a plurality of records, each indicating an input worker, a completion state, an output worker, and an output [status] state, wherein the input worker indicates the worker assigned to process the job, the completion state is a status indicated for the job after the input worker processes the job, the output worker is the worker that processes the job after having been processed by the input worker and resulting in the completion state, and the output state is the state to which the job status in the job status table is set, and wherein the job status table further indicates a current worker assigned to process the job, wherein the means for setting the status for the selected job in the job status table comprises determining from the worker transition table one record having an input worker and completion state matching the current worker and the job status, respectively, and setting the status for the selected job to the output state and the current worker to the output worker

22. (Amended) The system of claim 20, wherein the means for setting the status for the selected job after processing the job with one worker, comprises the worker that [completing] completed processing the job setting the completion status to a state indicating an outcome of processing the job.

23. (Amended)The system of claim 14, further comprising:

means for setting the status to a third status after adding the job [entry] in the job status table;

means for invoking a data conditioning worker if the job status for the selected job is the third status;

means for processing, with the data conditioning worker, the customer record to determine whether at least one value satisfies at least one condition;

means for taking corrective actions, with the data conditioning worker, if the data in the customer record does not satisfy each condition; and

means for setting the status of the selected job to the first status if the data in the customer record satisfies each condition.

24. (Amended) The system of claim 19, further comprising an imposition worker and table of contents worker, wherein the supervisor program includes:

means for setting the job status to an imposition status and table of content status; and

means for invoking the imposition and table of content workers.

29. (Amended) The article of manufacture of claim 27, wherein the first worker further causes the at least one computer to perform:

processing a template including queries of records in the database table;

accessing at least one value in a field in one customer record to include in a query against the database table; and

applying the query against the [second] database table to determine a record associated with a file including fields matching the query, wherein the accessed file is associated with the determined record, and wherein generating the content into the output material comprises generating the content from the accessed file into the template, which forms the output material.

33. (Amended) The article of manufacture of claim 27, wherein a worker transition table includes a plurality of records, each indicating an input worker, a completion state, an output worker, and an output [status] state, wherein the input worker indicates the worker assigned to process the job, the completion state is a status indicated for the job after the input worker processes the job, the output worker is the worker that processes the job after having been processed by the input worker and resulting in the completion state, and the output state is the state to which the job status in the job status table is set, and wherein the job status table further indicates a current worker assigned to process the job, wherein setting the status for the selected

job in the job status table comprises determining from the worker transition table one record having an input worker and completion state matching the current worker and the job status, respectively, and setting the status for the selected job to the output state and the current worker to the output worker.

35. (Amended) The article of manufacture of claim 33, wherein setting the status for the selected job after processing the job with one worker comprises the worker that [completing] comleted processing the job setting the completion status to a state indicating an outcome of processing the job.

36. (Amended) The article of manufacture of claim 27, wherein the computer programs embedded in the computer useable media further includes a data conditioning worker, further comprising:

setting the status to a third status after adding the job [entry] in the job status table;

invoking a data conditioning worker if the job status for the selected job is the third status;

processing, with the data conditioning worker, the customer record to determine whether at least one value satisfies at least one condition;

taking corrective actions, with the data conditioning worker, if the data in the customer record does not satisfy each condition; and

setting the status of the selected job to the first status if the data in the customer record satisfies each condition.

37. (Amended) The article of manufacture of claim 32, wherein the computer programs embedded in the computer useable media further include an imposition worker and table of contents worker, wherein the supervisor program sets the job status to an imposition status and table of content status, and wherein the supervisor program invokes the imposition and table of content workers.

*cross-industry network applications*

FIG. 3



Amended



IBM

# IBM 3130 50



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The highly reliable, cut-sheet IBM® 3130 Advanced Function Printer combines quality printing and media flexibility with multiple-interface networking. The printer's advanced controller technology simplifies the printing operations of complex computing environments.

**Environment sharing**
Today's complex computing environments require a printer to support multiple data streams and network connections. The IBM 3130 natively supports PostScript® Level 2, PCL5e, and IPDS™ data streams, as well as data stream sensing and switching. With these capabilities, the IBM 3130 can print from both host and Local Area Network (LAN) connections with efficiency. The printer can also support three network interfaces simultaneously. Open system attachments include Token-Ring, Ethernet and PC Parallel interfaces.

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**Media flexibility**
In addition to card stock and labels, the IBM 3130 handles all popular paper types and seven paper sizes, including A3/ledger (11"x17") paper. With an input capacity of up to 3,000 sheets, an output capacity of up to 2,500 sheets, and a print speed of 30 ipm, the IBM 3130 easily handles large-volume print jobs. To retain print job separation, each input tray and output stacker can be linked and dedicated to a specified application.

**Advanced controller p rf rmanc**
The IBM 3130 leverages the power of the Advanced Function Common Control Uni™ (AFCCU™) to ensure quality, performance, reliability and efficiency. The control unit's RISC technology incorporates attachment flexibility so the printer can support Intelligent Printer Data Stream™ (IPDS) environments as well as LAN environments. The AFCCU supports

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60 **Highlights**

- ***Features high throughput at up to 30 ipm, and up to 200,000 impressions per month***
- ***Supports multiple data streams including PostScript Level 2, PCL5e and IPDS***
- ***Handles seven paper sizes including A3/ledger (11"x17") paper***

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- ***Connects to three network interfaces simultaneously***
- ***Offers duplex model for two-sided printing***

64
- ***Separates print jobs with dedicated input trays and output stackers***
- ***Supports up to four input trays that hold 3,000 sheets of paper***

66
- ***Low cost of operation***
- ***Increase print performance, error recovery and attachment flexibility with the AFCCU***

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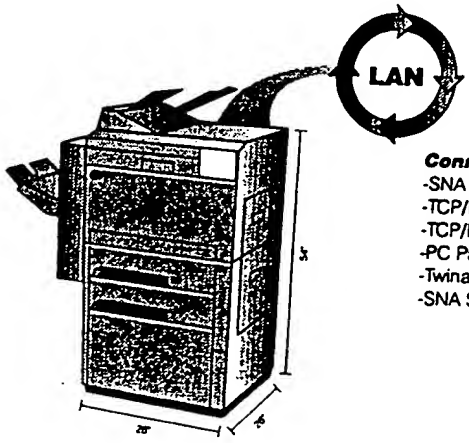


***Connections***
-SNA Token-Ring
-TCP/IP Token-Ring
-TCP/IP Ethernet
-PC Parallel
-Twinax
-SNA SDLC

*The IBM 3130 Advanced Function Printer features high-throughput, the AFCCU and AFP software to cost-effectively produce large print jobs over complex networks.*